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PacWastePlus
PACIFIC WASTE MANAGEMENT

This initiative is supported by **PacWastePlus**-a 85-month project funded by the European Union (**EU**) and implemented by the Secretariat of the Pacific Regional Environment Programme (**SPREP**) **to sustainably and cost effectively improve regional management of waste and pollution.**

*This has been produced with assistance from the **European Union**. Its contents are the sole responsibility of **SPREP** and do not necessarily reflect the views of the European Union.*

Kiribati National Waste Audit Analysis Report

June 2025

This Waste data collation, analysis and reporting for the Kiribati National Waste Audit Analysis Report was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT).

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PO Box 240

Apia, Samoa

T: +685 21929

E: sprep@sprep.org

W: www.sprep.org

Our vision: A resilient Pacific environment sustaining our livelihoods and natural heritage in harmony with our cultures.

PacWaste Plus Programme

The Pacific – European Union (EU) Waste Management Programme, PacWaste Plus, is a 72-month programme funded by the EU and implemented by the Secretariat of the Pacific Regional Environment Programme (SPREP) to improve regional management of waste and pollution sustainably and cost-effectively.

About PacWaste Plus

The impact of waste and pollution is taking its toll on the health of communities, degrading natural ecosystems, threatening food security, impeding resilience to climate change, and adversely impacting social and economic development of countries in the region.

The PacWaste Plus programme is generating improved economic, social, health, and environmental benefits by enhancing existing activities and building capacity and sustainability into waste management practices for all participating countries.

Countries participating in the PacWaste Plus programme are: *Cook Islands, Democratic Republic of Timor-Leste, Federated States of Micronesia, Fiji, Kiribati, Nauru, Niue, Palau, Papua New Guinea, Republic of Marshall Islands, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu*.

Key Objectives

Outcomes & Key Result Areas

The overall objective of PacWastePlus is "*to generate improved economic, social, health and environmental benefits arising from stronger regional economic integration and the sustainable management of natural resources and the environment*".

The specific objective is "*to ensure the safe and sustainable management of waste with due regard for the conservation of biodiversity, health and wellbeing of Pacific Island communities and climate change mitigation and adaptation requirements*".

Key Result Areas

- **Improved** data collection, information sharing, and education awareness
- **Policy & Regulation** - Policies and regulatory frameworks developed and implemented.
- **Best Practices** - Enhanced private sector engagement and infrastructure development implemented
- **Human Capacity** - Enhanced human capacity

Learn more about the PacWaste Plus programme by visiting

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SPREP Secretariat of the Pacific Regional Environment Programme

PacWastePlus PACIFIC WASTE MANAGEMENT

www.pacwasteplus.org

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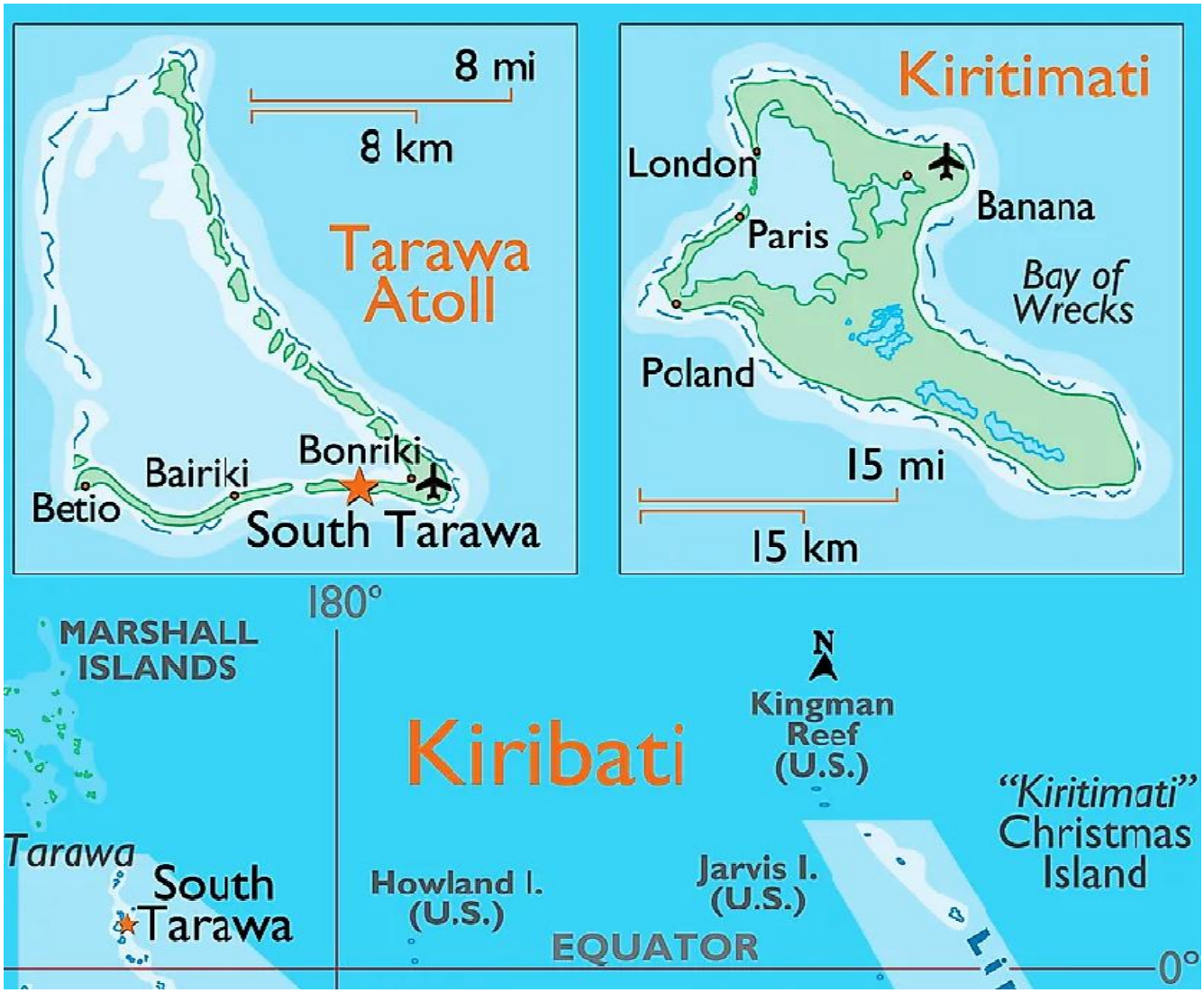
Map of Kiribati



Source: World Atlas, 2020

Glossary

Acronym	Definition
C&D	Construction and Demolition (Waste)
C&I	Commercial and Industrial (Waste)
CDS	Container Deposit Scheme
DCMR	Data Strategy & Collection, Monitoring, and Reporting (Framework)
KPI	Key Performance Indicator
KWMRR Strategy	Kiribati Waste Management and Resource Recovery Strategy
MEA	Multilateral Environmental Agreement
MELAD	Ministry of Environment, Lands and Agriculture Development
MSW	Municipal Solid Waste (i.e., waste originating from the general public that is typically managed by local government entities, excludes commercial / business waste)
NGO	Non-Governmental Organisation
PICT	Pacific Island Countries & Territories
SPREP	Secretariat of The Pacific Regional Environment Programme

Terminology	Definition
Capacity	The total maximum waste storage and processing that can take place at a facility (as capped by license conditions).
Capture rate	The proportion of total waste generated that is successfully captured and disposed or recovered in an environmentally responsible manner (e.g., by a formal collection service or self-hauled to a licensed facility)
Modern	A 'modern' facility employs 'sound waste management practices' (as defined by the UNEP) and results in minimal adverse impacts on the environment. A 'modern' facility must be licensed, staffed, and have access to equipment and machinery such as a bulldozer. A landfill or dumpsite must employ a leachate management system and a daily cover routine. A recovery facility should have fire prevention and control measures in place, and appropriate stormwater runoff controls. Facilities must not be exceeding their maximum storage capacity.
Coverage	The proportion of total households that have access to a regular waste collection service.
Per capita	Units measured on a per person basis (i.e., to allow for extrapolation over a national population).
Recovery	Any activity that diverts waste material from landfill, including processing of dry recyclables (such as paper, cardboard, metal and plastics such as PET and HDPE), organics recovery, and energy recovery.
Unregulated	Typically, unlicensed waste facilities which do not follow international frameworks, rules, and guidelines to protect the health of the environment and community.
Waste facility	'Waste facilities' involved in the handling, disposal, or recovery of waste streams above a minimum processing threshold determined on country basis (i.e., tonnes of waste received per year). Can include landfills or dumpsites (that primarily rely on burying waste in a controlled manner), recycling / recovery facilities for dry recyclables (and e-waste), organics recovery facilities, and waste-to-energy facilities. Incinerators are not included in this analysis.

Executive Summary

Waste data collation, analysis and reporting for the Kiribati National Waste Audit Analysis Report was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT). The implementation of the DCMR Framework ensures that waste data is collected, analysed, and reported in a consistent and reliable way across the Pacific.

Table (a) Summary of Key Performance Indicators (KPIs) for Kiribati

Core KPIs	Result	Supplementary KPIs	Result
1. Count / capacity of modern waste facilities	1 / Unknown	1. Cost of disposal to landfill ($/annum)	(US $4.80)
2. Count / capacity of unregulated waste facilities	6 / 8655tonnes/year	2. Weight of waste disposed (tpa)	9,336
3. National recovery rate (%)	3%	3. Weight of waste recovered (tpa)	236
4. Per capita waste generation rate (kg/capita/year)	112	4. Volume and type of stockpiled hazardous waste (m^3)	E-Waste: 11m^3
5. Municipal Solid Waste (MSW) composition (%)	Figure (a)	5. Marine plastic pollution potential (tpa)	359
6. Household waste capture rate (%)	53%	6. Awareness and support of waste management services (%)	46%
7. Household collection service coverage (%)	40%	7. Proportion of strategic waste management initiatives implemented (%)	69%
8. Fulfillment of MEA reporting requirements (%)	45%	8. Commercial waste capture rate (%)	82%
		9. Commercial collection service coverage (%)	82%
		10. Total weight of disaster waste disposed (tpa)	No data

Note: 'No data' indicates that the audit did not capture the parameters / measurements necessary to calculate the KPI.

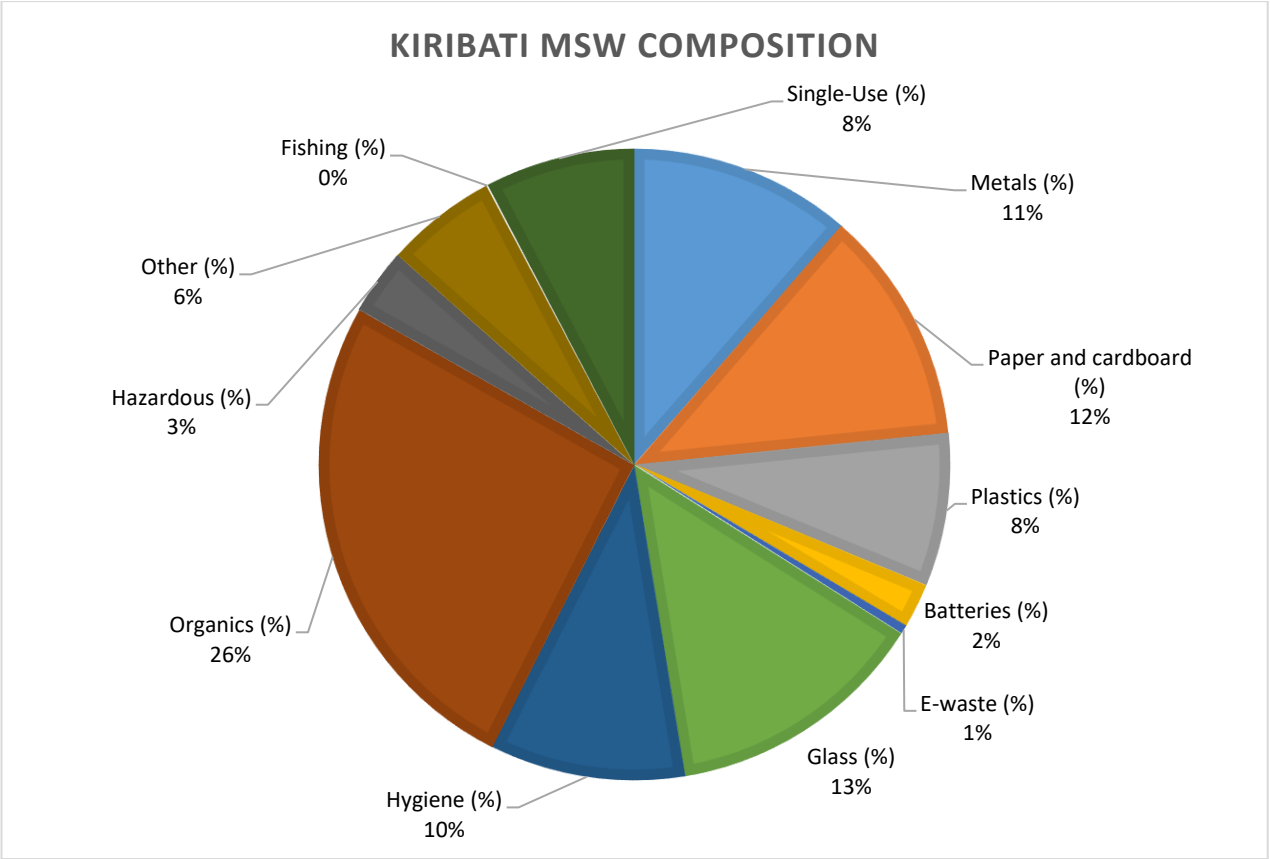


Figure (a) Kiribati Municipal Solid Waste (MSW) composition (% by weight)

1 Introduction

1.1 Background

Kiribati is one of fifteen Pacific Island Nations which took part in the PacWaste Plus Programme implemented through SPREP and funded by the European Union Delegation of the Pacific. The PacWaste Plus Programme aims to improve waste management activities across the islands and strengthen the capacity of Governments, industries, and communities to manage wastes to protect human health and the environment.

Kiribati's solid waste management has progressed substantially over the past three decades. Kiribati has a well-developed legislative framework for waste management and recycling, including an established container deposit scheme (CDS). The CDS is part of the Kaoki Maange (Keep Kiribati Beautiful) Program, a successful recycling initiative in the country. At the time of the audit report, the CDS was available in South Tarawa, where a material recycling facility near the Betio Landfill handles the collection of CDS-eligible items, electronic waste, and white goods. Betio Landfill has a shredder for chipping green waste and the woodchip is sold to the community.

However, landfilling is Kiribati's primary waste management method. With two of the three managed landfills in Kiribati reaching capacity, the threat of overflowing landfills and unmanaged waste is increasing. Waste collection services to the outer islands are limited, so residents rely on burying and burning of wastes or disposal of waste into the sea.

1.2 Purpose and Aim

The purpose of this audit analysis and report is to establish a baseline position for Kiribati waste data and waste management systems.

The aim of this report is to:

- Validate pre-existing national waste audit data;
- Collect additional data to inform data gaps from the Cook Islands 2023 National Waste Analysis Report; and
- Build national waste insights based on new key performance indicators (KPIs) to understand waste management trends.

The results presented in this report, and the other fourteen country waste data analysis reports, will be collated together to inform a broader Pacific Regional Data and Audit Analysis Report.:

1.3 Scope

The scope of this report is limited to the following waste data collected in Kiribati:

- **Kiribati waste audit report 2021**: The audit was undertaken by Asia Pacific Waste Consultants in March to April 2021 and provided an evaluation of household and business waste generated in Kiribati. Audit data and information was obtained via interviews and waste collection from 208 households and 53 businesses, followed by sorting and weighing. The audit report also provided an assessment of the state of Kiribati's landfills including landfill audits and stockpiles assessments.
- **Kiribati National Analysis Report 2023**
- **Additional Waste Audit in 2025**; Additional waste audit was commissioned by the Secretariat of the Pacific Regional Environment Programme to fill data gaps in the 2023 National Analysis Report for Kiribati This included Waste Facility Register.
- **2020 Kiribati National Census**

This national report examines the MSW, commercial and industrial (C&I), disaster waste and landfill waste streams. Landfills may receive a broad array of waste types, including construction and demolition (C&D) waste, hazardous waste, and other types of waste in addition to MSW and C&I waste. As such, landfill waste is considered a separate waste stream.

The potential for marine plastic pollution is considered for macroscopic plastic waste (i.e., plastics that can be identified through compositional audits) originating from household sources. Accurate data on the amount and management of macroscopic plastic waste in the region is limited.

1.4 Country Overview

The Republic of Kiribati is an independent, low-lying island nation located in the central Pacific Ocean. It is less than 100 kilometres from the equator and one of the most remote countries in Micronesia. Its 21 inhabited islands (of a total of 33 islands) are on average 6 metres above sea level.

The three island groups are the Gilbert Islands, the Line Islands, and the Phoenix Islands. Approximately 45% of Kiribati's population of 119,438 people live on urban South Tarawa, an island with a narrow reef on one side and a shallow lagoon reaching kilometres out to sea, with one road in the middle. The remaining 55% of Kiribati's population live on the rural outer islands. Although Kiritimati Island is part of Kiribati, it is 2,000 kilometres from the capital in Tarawa and there are no direct flights between them.

Kiribati has developed significant environmental legislation, policy, and strategies for solid waste management, such as the *Environment Amendment Act 2007* and the *Kiribati Waste Management and Resource Recovery Strategy 2020–2030 (KWMRR Strategy)*. In addition, Kiribati has ratified numerous international and regional commitments related to the environment, most notably the Basel and Waigani Conventions.

The responsibility for managing solid waste is divided among national and municipal institutions in Kiribati, which include:

- National Government: Largely responsible for policy and planning solid waste management nationally via Kiribati's Ministry of Environment, Lands and Agriculture Development (MELAD). MELAD oversees solid waste management by regulating and funding waste management services. The Government also has a Bureau of Public Works, which includes infrastructure planning, and raising public awareness about solid waste management issues. Additionally, the national government coordinates with local governments to address solid waste issues and implement the KWMRR Strategy.
- Local/municipal government: For those with access to collection services, the municipal governments of Kiribati are responsible for household and commercial waste collection, the management of landfills, and recycling facilities and projects.

Beyond this, private recycling companies have a contractual arrangement with public entities to provide waste management and pollution control services.

2 Methodology

Waste data collation, analysis and reporting was guided by the overarching Regional Waste Data Collection, Monitoring, and Reporting (DCMR) Framework for the Pacific Island Countries and Territories (PICT). The implementation of the DCMR Framework ensures that waste data is collected, analysed, and reported in a consistent and reliable way across the Pacific.

2.1 Data Sources

Data collated and examined in this audit analysis report was sourced from the data sources listed in **Table 1.**

Table 1 Data sets Analysed

Data Source	Year	Location/s	Sample Size/s	Method for Data Collection	Reported Data	Notes
Kiribati National Census	2020	Nationwide		Questionnaires distributed to households by 462 interviewers arranged by the National Statistics Office.	Population and household data	
Kiribati Waste Audit APWC	2020/21	Tarawa, Abaiana, Maiana	Total sample size of 201 households: 116 south Tarawa (urban); 85 in Abaiana and Maiana (rural). Total sample size of 53 commercial premises on south Tarawa.	Commercial and household compositional waste audits, commercial and household community surveys.	Commercial and household waste composition and qualitative survey responses.	Used to inform 2023 Kiribati National Waste Audit Analysis Report.
Kiribati National Waste Audit Analysis Report MRA Consulting Group	2023	Nationwide	The National Waste Audit Analysis Report uses data from the Waste Audit Report outlined above.			
Waste Facility Register Eunomia Research & Consulting	2025	Bikenibeu, Nanikaai, Betio, and Tabwakea villages.	8	Waste Facility Register distributed to facilities as advised by MELAD officers.	Facility details.	Used to inform 2025 Kiribati National Waste Analysis Report.

2.2 Data Analysis

The datasets listed in the table above were analysed for relevant information to be collated into PICT specific databases. The extracted data was then used to calculate the 18 KPIs according to the calculation methodologies as detailed in the DCMR Framework. The main assumptions made and challenges met during the analysis are discussed below.

Where it was necessary to modify calculation methodologies or assumptions (e.g. in cases of missing data or when certain parameters had to be calculated using assumptions derived from external data sources like census data), details of the changes are provided under the corresponding KPI in section 3.0 Analysis.

2.2.1 Main Assumptions

- The audit data provided for 'urban' areas (South Tarawa) and 'rural' areas (Abaiang and Maiana) (see Table 2) is assumed to be representative of the rest of the country.
- All population estimates used to calculate performance indicators are based on national census data from 2020, which predates the audit (completed in 2021).
- All waste plastics which are not managed in an environmentally sound manner are assumed to have the potential risk of polluting oceans and estuarine waterways.
- Commercial waste service coverage reporting has relied primarily on survey information conducted during audits of commercial business waste.
- The main assumption is that the previously collected data is representative of the goals of the current project.

2.3 Key Performance Indicators

The DCMR Framework introduces a series of KPIs (see **Table 2**). The KPIs were developed to guide data analysis with the aim of improving the efficiency of data collection activities by building on pre-existing data collection practices across the region.

Each of the KPIs were designed to be reported to using corresponding data collection methodologies. These are:

- a waste facility register;
- household waste audits and community surveys;
- business waste audits and surveys;
- a policy survey; and,
- landfill and stockpile audits.

Table 2 Key Performance Indicators (KPIs) from the DCMR Framework

Core KPIs	Supplementary KPIs
1. Count / capacity of modern waste facilities	1. Cost of disposal to landfill
2. Count / capacity of unregulated waste facilities	2. Weight of waste disposed
3. National recovery rate	3. Weight of waste recovered
4. Per capita waste generation rate	4. Volume and type of stockpiled hazardous waste
5. Municipal Solid Waste (MSW) composition	5. Marine plastic pollution potential
6. Household waste capture rate	6. Awareness and support of waste management services
7. Household collection service coverage	7. Proportion of strategic waste management initiatives implemented
8. Fulfillment of Multilateral Environmental Agreement (MEA) reporting requirements	8. Commercial waste capture rate
	9. Commercial collection service coverage
	10. Total weight of disaster waste disposed

3 Audit Analysis Results

3.1 Summary of Data Availability

The waste audits provided varying levels of data and information for the purposes of calculating performance via the indicators introduced in the DCMR Framework. The extent to which there was adequate data and information to calculate the KPIs is represented below in **Table 4.**

Table 4: Summary of data availability for reporting against DCMR Framework KPIs

Core KPIs		Supplementary KPIs	
1. Count / capacity of modern waste facilities		1. Cost of disposal to landfill	
2. Count / capacity of unregulated waste facilities		2. Weight of waste disposed	
3. National recovery rate		3. Weight of waste recovered	
4. Per capita waste generation rate		4. Volume and type of stockpiled hazardous waste	
5. Municipal Solid Waste (MSW) composition		5. Marine plastic pollution potential	
6. Household waste capture rate		6. Awareness and support of waste management services	
7. Household collection service coverage		7. Proportion of strategic waste management initiatives implemented	
8. Fulfillment of MEA reporting requirements		8. Commercial waste capture rate	
		9. Commercial collection service coverage	
Legend: Calculated with additional data / Calculated in previous Report / No data		10. Total weight of disaster waste disposed	

Note: • ***Capacity was only returned by one of the 7 facilities so was not able to be used for the KPI calculations.***

In summary:

- The audit reports provided adequate information for Core KPIs 3 to 8, and Supplementary KPIs 2, 3, 5, and 7.
- There was limited data available to calculate Supplementary KPIs 4, and 10.
  - Storage and processing capacities for waste facilities were not identified by facilities.
  - There were some measurements of volume for e-waste, but no mention of measurements for all other hazardous waste categories.
  - No specific operational costs were presented for the landfills in Kiribati.

In the future, improved data capture and data quality will benefit performance assessment by reducing the extent to which assumptions and substitutions are necessary. In turn, the KPIs will reflect a more accurate depiction of the status of waste management in Kiribati. KPI Reporting Results

The following sections present the results of the collated and analysed waste audit data for each of the eight core and ten supplementary KPIs introduced in the DCMR Framework.

The results of the analysis will serve as a baseline position for Kiribati to compare future data to, and to guide subsequent waste management or waste data related activities.

Core KPI 1: Count / capacity modern waste facilities

Result	**Count of modern waste facilities: 1** • Only one waste facility, the Betio MRF, was recognised as being modern according to the definition set out in the DCMR Framework. In 2021 Cabinet mandated that the recycling operations at Betio Landfill must move, and the KSWMP in late 2022 set to plan the upgrade of the Betio MRF. The Betio MRF has recently opened to extend the existing recycling operations run by the Kaoki Maange container deposit scheme, including storage for the upcoming end-of-life vehicle recycling operations. The site upgrade began in May 2023 and includes a 300m2 steel building on a concrete slab that backfilled part of the landfill that had been dug out with reef-mud, sand, and concrete from C&D waste resulting in a height 3.3 above mean sea level. • It is understood that there is an investigation being done to replace the dumpsite in Tabwakea, it is unclear whether any new dumpsite at Tabwakea would be modern or unregulated. **Capacity of modern waste facilities (tonnes per annum): Unknown** • The capacity of the Betio MRF is currently unknown. The previous operations by Kaoki Maange have a capacity of 275 tonnes/annum, however with the extended site it is unclear how much the capacity has increased.
Assumptions	None
Data gaps	• The capacity of the Betio MRF is currently unknown.
Key considerations	• This KPI requires knowledge of the capacity of the new Betio MRF.

Core KPI 2: Count / capacity of unregulated waste facilities

Result	**Count of unregulated waste facilities: 6** • Bikenibieu Landfill • Classified as unregulated as it does not utilise daily cover. • Nanikaai Landfill • Classified as unregulated as it does not utilise daily cover. • Betio Landfill • Classified as unregulated as it does not utilise daily cover. • Unregulated dumpsites: Tabwakea, Abaiang, and Maiana • It is understood that there is an investigation being done to replace the dumpsite in Tabwakea, it is unclear whether any new dumpsite at Tabwakea would be modern or unregulated. **Capacity of unregulated waste facilities (tonnes per annum): 8655 tonnes/annum**

Assumptions	• • Capacity of Nanikaai and Betio landfills are assumed to be 0 tonnes per annum. • The capacity is attributed to Bikenibieu Landfill, Kaoki Maange operations (prior to the Betio MRF upgrade), and organic shredders at Nanikaai and Betio landfill sites.
Data gaps	• The data includes estimates and does not consider waste disposed to unregulated dumpsites.
Key considerations	• The capacity of the unregulated waste facilities includes data from the previous Kaoki Maange operations that will now operate from the upgraded Betio MRF. • The capacity does not include data from the three unregulated dumpsites.

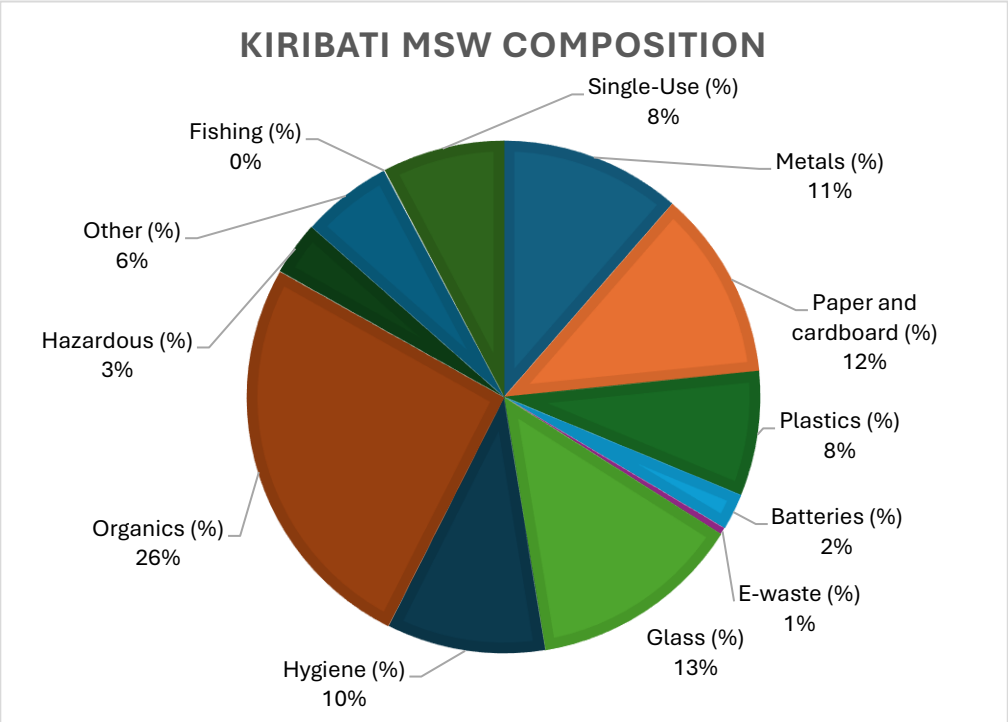
Core KPI 3: National recovery rate

Results	**National recovery rate (%): 3%** • The recovery considers material collected by Kaoki Maange at the previous site at the Betio Landfill, as well as the organic shredders at Nanikaai and Betio landfills. The Kaoki Maange has a central drop-off location as well as at least five other drop-off points. The recovery done by Kaoki Maange includes: – 60 tonnes/annum used lead acid batteries – 82 tonnes/annum aluminium cans – 4.2 tonnes/annum e-waste • And the Nanikaai and Betio Landfill sites recover around 40 tonnes of organic material through shredding and distributing to community per annum.
Assumptions	This calculation assumes that the Kaoki Maange and organic shredding activities are accessible to most of the population within Kiribati.
Data gaps	None
Key considerations	• Kiribati is one of the few Pacific Island Nations with a dedicated waste recovery system and infrastructure. • Recovery is expected to increase with the improved MRF at the Betio Landfill that Kaoki Maange operates from. • The upcoming end-of-life vehicle programme will also increase recovery and keep cars on the road for longer with availability of spare parts. • Recycling relies on export sales and can result in plastic stockpiles as the market for plastic is weak. • Participation of the CDS would be likely to increase if the deposit price was increased. Given the low value of plastic in overseas markets PET bottles are less likely to be returned than aluminium cans that have better markets.

Core KPI 4: Per capita waste generation rate

Results	**Per capita waste generation rate (kg/capita/year): 112** – kg/capita/day: 0.306 – kg/household/day: 1.60
Assumptions	• Household waste audit data was converted from a per household basis to a per capita basis, then grouped and averaged based on geographic position (i.e. rural or urban), and extrapolated using census data of the national population. • Where divisions had no data (Southern Division, Line Islands & Phoenix Division), an assumed 'rural' average waste generation rate was used based on data from household audits from the Northern and Central Divisions. • The South Tarawa Division is considered the only urban population in Kiribati. • Per capita information was sourced from 2020 census results.
Data gaps	• No information recorded in Southern Division, and the Line Islands & Phoenix Divisions. • Not all regions, islands or towns/villages represented in the audit report have corresponding data represented in the 2020 census.
Key considerations	• It is recommended that future audits provide greater data coverage across all the divisions in Kiribati.

Core KPI 5: Municipal Solid Waste (MSW) Composition

Results	Organic waste is the most prevalent waste type found in household waste compositions (in Kiribati) at 26%. This is followed by glass (13%) and metal (11%) as shown in the table and pie chart below.  Figure 1 Kiribati Municipal Solid Waste (MSW) composition (% by weight)
Assumptions	None
Data gaps	• No samples taken in the Southern Division, Line Islands & Phoenix Division.
Key considerations	• The prevalence of organics in the household waste stream is likely due to reliance on local subsistence agriculture, as rural communities often have fewer options for food and goods, which can result in a greater reliance on locally grown or produced items. • Organics recovery systems, such as a local or national composting service could help support local farmers and reduce the amount of organic waste destined for landfill. • According to the audit report, following a ban on plastic bags and nappies in 2020 it is likely that organic or compostable alternatives will enter the waste stream and increase the overall proportion of organic waste generated by households. • It is recommended that compositional data is updated data on a regular basis. Impacts of the pandemic and climate change or weather events will have changed the proportions of waste types sourced from households. • Household waste compositions provide an insight into the types of waste contained inside the MSW stream. Knowledge of the waste types and proportion of these wastes present within the household waste stream allows for targeted decision making and prioritisation of problem waste types.

Core KPI 6: Household waste capture rate

Results	**Household waste capture rate (%): 53.07%** – Total weight of household waste generated = 13,348 tpa – Total weight of household waste captured responsibly = 7,084 tpa
Assumptions	• The survey and audits did not capture each household's disposal method, nor the weight of waste captured by management services, so census data was used and extrapolated across household audit results. $$Household\ waste\ capture\ rate\ (\%) = \frac{weight\ of\ managed\ waste\ (tpa)}{total\ household\ waste\ generated\ (tpa)}$$ Total weight of managed waste is calculated as the product of: $$weight\ of\ managed\ waste\ (tpa) = \frac{household\ collection\ coverage\ (\%)}{total\ household\ waste\ generated\ (tpa)}$$ Collection service coverage (%) is the product of: $$household\ collection\ coverage\ (\%) = \frac{number\ of\ households\ with\ some\ form\ of\ collection\ service}{total\ number\ of\ households}$$ Total household waste generated is the summation of waste generation tonnages for all sampling locations. Waste generation rates for individual sampling locations are calculated by: $$total\ household\ waste\ generated\ (tpa) = average\ waste\ generation\ rate\ of\ location\ \left(\frac{\frac{kg}{capita}}{year}\right) \times location\ population$$
Data gaps	• The audit did not quantify household disposal methods. • No data was collected in the Southern Division and Line Islands & Phoenix Division.
Key considerations	• Just over half of the waste generated in Kiribati is captured by formal collection services (i.e. successfully captured and disposed or recovered in an environmentally responsible manner). • There are no collection services available to the rest of the outer islands of Kiribati. On these islands, all waste is dumped, buried, or burned. • This KPI is expected to change in the future as relevant data is collected and used to calculate a more accurate household waste capture rate.

Core KPI 7: Household collection service coverage

Results	**Household collection service coverage (%): 40.09%** • Household collection services are only offered on South Tarawa, Kirimati, and Betio islet. None of the islands with access to collections have full coverage.
Assumptions	• This performance indicator has been calculated based on information from 2020 census data: – Number of households; and – Proportion of populations by division. • Coverage percentages for each division were derived from figures provided in the audit report for South Tarawa, Betio, and Kirimati. These were averaged for each island, used representatively for their corresponding divisions, and then extrapolated to the national level based on rural and urban zonings of the divisions.
Data gaps	None
Key considerations	• Establishing a waste collection service throughout all of Kiribati remains a significant challenge. Some households in South Tarawa, Betio and Kiritimati are not receiving collections. There are no collection services available to the remaining islands of Kiribati. On these islands, all waste is dumped, buried, or burned. • Expanding coverage on Kiribati's other islands would increase the waste capture rate and reduce the quantity of waste that is mismanaged. • A more representative result for this KPI can be achieved through use of the DCMR Framework's suggested community survey.

Core KPI 8: Fulfillment of Multilateral Environmental Agreement (MEA) reporting requirements

	Fulfillment of MEA reporting requirements (%): 44.55% **Convention** / **Status** / **Reporting requirements** / **Reports delivered** **Basel Convention** / Accession / Annual reports (22) / 3 **Minamata Convention** / Accession / 1 report / 1 **Stockholm Convention** / Ratified / 5 reporting cycles (5) / 1
	None
	• Only MEA's with mandatory reporting requirements were included in the calculation of this KPI. • For conventions like the Waigani Convention, strict reporting requirements are not enforced and so are not included in the calculation.
	• Kiribati has satisfied the reporting requirements for the Minamata Convention on Mercury. Kiribati is significantly behind on national reports for the Basel and Stockholm Conventions.

Supplementary KPI 1: Cost of disposal to landfill

Results	**Cost of disposal to landfill ($/tonne): USD$4.80**
Assumptions	• This estimate is broken down by maintenance, fuel, staff, and loader drivers, and is the same for each of the three landfill sites.
Data gaps	• This is an estimate rather than actual costs, and the cost ($14,570) was the same across the three landfills Bikenibieu, Nanikaai, and Betio. These landfills manage different volumes of material ranging from 1600 to 4500 tonnes per annum.
Key considerations	• With knowledge of this KPI requirement for future reporting this KPI is likely to become more accurate as data will be collected for it.

Supplementary KPI 2: Total weight of waste disposed

Results	**Total weight of waste disposed (tonnes per annum): 9336** Data was provided for Bikenibieu, Nanikaai, and Betio landfills, as well as Kaoki Maange, and the organic shredders at Nanikaai and Betio landfill sites.
Assumptions	None
Data gaps	None
Key considerations	• This KPI provides an indication of the effectiveness of a country's waste management system in diverting waste from the environment via landfill. This result can be used to evaluate the need for additional investment into waste disposal infrastructure and identify opportunities for improved recycling.

Supplementary KPI 3: Total weight of waste recovered

Results	**Total weight of waste recovered (tonnes per annum): 263.2** • Data was provided for recovery via Kaoki Maange and organic shredders at Nanikaai and Betio landfill sites.
Assumptions	None
Data gaps	None
Key considerations	• Recycling on Kiribati relies on export to other countries. The lack of markets for Kiribati to export recyclable waste to limits the recovery of waste in the country.

Supplementary KPI 4: Volume and type of stockpiled hazardous waste

Results	**Volume and type of stockpiled hazardous wastes (m^3):** – Asbestos: No data – E-waste: 11 m^3 – Healthcare and pharmaceutical waste: No data – Used oil: No data – Used tyres: No data – Obsolete chemicals: No data
Assumptions	None
Data gaps	• No volumetric data was provided for any hazardous material stockpiles aside from e-waste. • No data was found relating to stockpiles for these materials. Further information is required to confirm how these wastes are managed.
Key considerations	• Further information as to the presence, waste type and volume of hazardous waste stockpiles in Kiribati is required to effectively manage these stockpiles/waste materials. • Landfill audits, stockpile assessments, and the completion of the waste facility register as proposed by the DCMR Framework will provide the necessary information to calculate this performance indicator.

Supplementary KPI 5: Marine plastic pollution potential

Results	**Marine plastic pollution potential (tonnes per annum): 359**
Assumptions	• Assumes a national weight of mismanaged waste, based on household audit samples. – This calculation uses the total weight of waste generated, subtracted by the weight of waste captured by collection services. The difference is the estimate for mismanaged waste used in this calculation. – Mismanaged waste is defined as all waste which is not captured in collection services, and ends up buried / burned / littered etc. • Uses proportion of plastics captured in MSW composition.
Data gaps	• Requires a more reliable metric for mismanaged waste.
Key considerations	• Waste plastics which are not managed in an environmentally sound manner are assumed to pose a significant risk of polluting oceans and estuarine waterways.

Supplementary KPI 6: Awareness of waste management services

Results	**Awareness of waste services (%): 46%**
Assumptions	The calculation uses data from Community Surveys undertaken in Abaiang, South Tarawa, and Maiana and assumes that these areas are representative of Kirbiati.
Data gaps	• None
Key considerations	• None.

Supplementary KPI 7: Proportion of strategic waste management initiatives implemented

Results	**Proportion of waste management initiatives implemented (%): 68.75%** – Number of successfully implemented waste initiatives = 11 out of 16 – Number of planned/pipeline initiatives = 5 • Implemented waste initiatives include: – Kiribati National Implementation Plan for Persistent Organic Pollutants 2019 – Kiribati Integrated Environment Policy 2013 – Kiribati Waste Management and Resource Recovery Strategy 2020–2030 (KWMRR Strategy) • Pipeline initiatives include: – Review of Kiribati's integrated environment policy – Revised National Waste Management Strategy – Review of the Environment Act (as amended in 2007)
Assumptions	None
Data gaps	None
Key considerations	• Solid waste management in Kiribati relies on existing laws related to the environment, public health, customs, and disaster management which include waste management measures. • The dominant waste management initiative is the KWMRR Strategy. • While Kiribati has no specific waste management legislation, initiatives and measures implemented in other laws reflect the country's growing commitment to proper waste management. These include, for example: – Banning the import of single use plastic bags in 2020, via the *Kiribati Customs Act 2019*. – *The Public Highways Protection Act 2018*, which empowers the Kiribati Land Transport Authority to prohibit littering on any public highway.

Supplementary KPI 8: Commercial waste capture rate

Results	**Commercial waste capture rate (%): 82%** • Of the 73 respondents to the Commercial Community Survey, 13 businesses self-haul waste to appropriate waste drop-off facilities. • According to the surveys this results in 4734 tonnes/annum of waste generated, and 3,861 tonnes/annum of waste collected.
Assumptions	• The Commercial Community Survey that took place in South Tarawa is representative of Kiribati given that most commercial activity takes place there. • There are 5,463 registered businesses.
Data gaps	• None
Key considerations	• Accurate calculation relies on an estimate of total numbers of businesses in the country categorised by business type, and an estimate of the commercial waste generation rates for each business type. • Completion of business surveys suggested in the DCMR Framework will provide an indication of how many businesses are using collection services, and other forms of waste management, and to what extent these businesses access the service.

Supplementary KPI 9: Commercial collection service coverage

Results	**Commercial collection service coverage (%): 82%** • Of the 73 respondents to the Commercial Community Survey, 13 businesses self-haul waste to appropriate waste drop-off facilities
Assumptions	• The Commercial Community Survey that took place in South Tarawa is representative of Kiribati given that most commercial activity takes place there.
Data gaps	• None
Key considerations	• Completion of business surveys suggested in the DCMR Framework, would provide an indication of how regular, accessible, and affordable collection services are for businesses.

Supplementary KPI 10: Weight of disaster waste disposed

Results	**Weight of disaster waste disposed (tpa): No data** • Measured as a sum of the recorded weight of disaster waste disposed to landfill or received and stockpiled at waste facility following a disaster event. • No disaster waste data was recorded during the examined audits.
Assumptions	• Only captures disaster waste which ends up disposed of or stored at waste facilities, including landfills, disposal sites and recovery facilities. • Assumes that the waste facility register has been completed to capture disaster waste information separately of other waste loads received post-event (i.e. information on disaster waste categorised separately to other waste types/streams).
Data gaps	• The calculation of this performance indicator relies on estimations of the weight of disaster waste (tonnes) landfilled or received at a waste disposal facility following disaster events.
Key considerations	• There have been no disaster events in Kiribati in the last 12 months. • Calculating this KPI can be undertaken by regularly updating the waste facility register. Tracking the vehicle capacity and percentage fullness of the load of any 'disaster waste' carrying vehicles entering the facility will help reconcile waste amounts disposed if these wastes are not managed separately.

4 Conclusion

There could be a big opportunity to promote the DCMR framework at the national level to enable the availability of more reliable regional data for strategic planning by SPREP through this project. However, this would entail more intensive training at the country level to ensure uptake of knowledge and sustained compliance to the framework. In addition, there should be a pilot year set-up for data collection before new annual KPI calculations are made.

The improved waste management system in Kiribati should be sustained and further support is needed for areas with limited data availability. There is a strong need to encourage continuous recording system to be in place for most of the facilities in the countries.

While the previous 2023 analysis presented KPI calculations based on sufficient data in Kiribati, some of these KPIs were recalculated based on raw data from waste auditors who did the actual audit. There were differences (some are slight) owing to the weighting approach done in the calculation of national averages. There were also KPIs with no data reported in the previous report which are available from the raw data of the actual waste audit. The common methodology approach which was agreed prior to the recent audits should be strictly used to allow lateral comparison among the countries and enable more reliable regional data.

There is still a huge gap in the data received from countries owing to the limited recording system available to monitor waste material flow. If recording is done regularly and data stored properly and made available for any legitimate request from external customers, there may be lower probability of obtaining guess estimates of material flow. The confidence level of available data could be higher.

5 Appendix

5.1 Collection Methods

The KPIs are calculated from a range of data sources.

Collection Method	What the Collection Method Informs	About the Collection Method	Frequency of Reporting
Waste Facility Register	**KPI 1** Count and capacity of modern waste facilities **KPI 2** Count and capacity of unregulated waste facilities **KPI 3** National recovery rate **SKPI 1** Cost of disposal to landfill **SKPI 2** Weight of waste disposed **SKPI 3** Weight of waste recovered **SKPI 4** Volume and type of stockpiled hazardous waste **SKPI 10** Weight of disaster waste disposed.	The Waste Facility Register is a written survey that can be completed on Word, Excel, Kobo Toolbox, or something similar. It should be completed by or on behalf of waste facility operators.	Annual submission of monthly report (all KPIs and SKPIs). As and when disaster events occur (SKPI 10).
Household Community Survey	**KPI 4** Per capita waste generation rate **KPI 6** Household waste capture rate **KPI 7** Household collection coverage **SKPI 5** Marine plastic pollution potential **SKPI 6** Awareness and support of waste management services.	The Household Community Survey is a written survey that can be completed on Word, Excel, Kobo Toolbox, or something similar. It should be completed by or on behalf of households in Kiribati.	Every five years.
Household Compositional Waste Audit	**KPI 4** Per capita waste generation rate **KPI 5** Municipal solid waste (MSW) composition **KPI 6** Household waste capture rate **SKPI 5** Marine plastic pollution potential.	The Household Compositional Waste Audit is a sort and weigh audit undertaken according to the Waste Audit Methodology: A Common Approach.[1]	Every five years.
Commercial Community Survey	**SKPI 6** Awareness and support of waste management services **SKPI 8** Commercial collection service coverage **SKPI 9** Commercial collection service coverage.	The Commercial Community Survey is a written survey that can be completed on Word, Excel, Kobo Toolbox, or something similar. It should be completed by or on behalf of households in Kiribati.	Every five years.
Commercial Compositional Audit	**KPI 4** Per capita waste generation rate **KPI 5** Municipal solid waste (MSW) composition **SKPI 5** Marine plastic pollution potential.	The Commercial Compositional Waste Audit is a sort and weigh audit undertaken according to the Waste Audit Methodology: A Common Approach.	Every five years.

[1] https://www.sprep.org/sites/default/files/documents/publications/waste-audit-methodology-common-approach.pdf

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